

REMARKS

In view of the following remarks, Applicant respectfully requests reconsideration and allowance of the subject application. This amendment is believed to be fully responsive to all issues raised in the Office Action mailed
5 October 18, 2004.

Specification Amendments

The specification has been amended to obviate the rejection recited in the application. No new matter is added.

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Double Patenting Rejections

Applicants traverse the provisional statutory double patenting rejection. Statutory double patenting requires complete identity of the claims. (MPEP 804). Pending claim 1 is *not* directed to subject matter identical to claim 1 of
15 U.S. Patent Application Serial No. 09/872,962. In particular, pending claim 1 recites "an agent connected to the host, the agent having volatile memory for storing a *first copy* of a table . . ." Claim 1 of U.S. Patent Application Serial No. 09/872,962 lacks a corresponding recitation.

Applicants submit herewith Terminal Disclaimers to obviate the double
20 patenting rejections issued in the Action.

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Rejections Under 35 U.S.C. §112

Claim 15 is amended herein to obviate the rejection under 35 U.S.C. §112, second paragraph.

5 Rejections Under 35 U.S.C. §103

Claims 1-40 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,260,120 to Blumenau (hereinafter, "Blumenau"). Applicant respectfully traverses these rejections.

Independent claim 1 includes a limitation requiring "an agent connected
10 to the host, the agent having volatile memory for storing a first copy of a table, the table having entries to map virtual disk positions to locations on the storage devices." The Action asserts that Blumenau discloses this limitation, and cites Fig. 30 and col. 30, lines 53-55 and col. 32 lines 43-55 to support the assertion. Applicants disagree. A close inspection of Blumenau reveals that Fig. 30 is a
15 GUI display that maps a relationship between logical storage volumes on the storage subsystem and the volumes addressed by the host. Fig. 30 neither discloses nor suggests a table having entries to map virtual disk positions to locations on storage devices, as recited in claim 1.

Col. 30, lines 30-55 reads as follows:

20 In this example, the GUI display screen includes, on the left, a list 346 in outline form of storage subsystem components down to a set of logical volumes for one virtual port, and on the right, a list 347 in outline form of host components down to a set of LUNs as
25 addressed from one host controller port.

Col. 32, lines 45-45 reads as follows:

A primary copy of the configuration information for the volumes accessible to a host is kept in the storage subsystem and on the host.

5 Contrary to the assertion in the action, nothing in the text discloses or suggests a table having entries to map virtual disk positions to locations on storage devices, as recited in claim 1.

Claim 1 further recites a limitation requiring "a controller coupled to the agent, the controller having non-volatile memory for storing a second copy of
10 the table, the controller intermittently causing contents of the first copy of the table to be replaced by contents of the second copy of the table." The Action asserts that Blumenau discloses this limitation, and cites Figs. 4-5 and col. 14, lines 27-31 and col. 25 lines 1-7 to support the assertion. Applicants disagree.

The cited text reads as follows:

15 For example, a volume access table 80 and volume lists 81 are stored in the memory 77. The volume access table specifies a correspondence between hosts and respective lists of volumes accessible to the hosts. A back-up copy of the volume access table and volume list could be stored in one of the storage
20 volumes of the cached storage subsystem.

This assignment information must also be used by the host if the host has an operating system that permits the host to boot from a logical volume in storage linked by the Fibre Channel
25 network to the host, or that permits the operating system of the host to collect information about the logical storage volumes that it can access. In other words, the operating system routine that searches for the storage volumes that are accessible to the host must send Report LUNs commands to only the virtual ports
30 assigned to the host and not to the virtual ports assigned to other hosts.

Nothing in this text discloses or suggests a storage controller that includes a second copy of a table that maps virtual disk positions to locations on a storage device.

Claim 1 further recites a limitation that "whereby during an input/output
5 (I/O) operation, the host accesses one of the entries in the table stored on the agent to determine one of the storage device locations." The Action asserts that Blumenau discloses this limitation, and cites col. 32 lines 45-47 to support the assertion. Applicants disagree.

The cited text reads as follows:

10 The host should be able to access the primary copy on the storage subsystem if a host's local copy is not available.

Nothing in this text discloses or suggests an arrangement in which a host accesses one of the entries in the table stored on the agent to determine one of
15 the storage device locations, as recited in claim 1.

In sum, contrary to the assertion in the Action, Blumenau neither discloses nor suggests the limitations of independent claim 1. Accordingly, Blumenau cannot render obvious independent claim 1.

Dependent claims 2-11 depend from claim 1 and are allowable by virtue
20 of this dependency, and by virtue of the limitations recited therein.

Independent **claim 12** was rejected on the same basis as independent claim 1. Applicants traverse this rejection, and assert that same arguments asserted with reference to claim 1.

Dependent claims 13-23 depend from claim 12 and are allowable by
25 virtue of this dependency, and by virtue of the limitations recited therein.

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Independent claim 24 recites a limitation that requires "accessing a table mapping the block to a storage location on a storage device." The Action asserts that Blumenau discloses this limitation, and cites Fig. 30 to support the assertion. Applicants disagree. As set forth above, Fig. 30 is a GUI display that maps a relationship between logical storage volumes on the storage subsystem and the volumes addressed by the host. Fig. 30 neither discloses nor suggests a table mapping a block to a storage location on a storage device, as recited in claim 24.

Claim 24 further includes limitations that require "issuing a corresponding operation to the storage device, wherein the corresponding operation correlates to the operation on the virtual disk; completing the corresponding operation; and presenting the completed corresponding operation to the virtual disk." The Action asserts that Blumenau teaches these limitations and cites Fig. 30 and col. 30, lines 47-57 and col. 22, lines 41-49. The cited text reads as follows:

Referring to FIG. 30, there is shown a GUI display screen for permitting the system administrator to set up the relationship between logical storage volumes of the storage subsystem (the volume source) and the volumes addressed by a host (the volume user). In this example, the GUI display screen includes, on the left, a list 346 in outline form of storage subsystem components down to a set of logical volumes for one virtual port, and on the right, a list 347 in outline form of host components down to a set of LUNs as addressed from one host controller port. The "bus" in the right column refers to a host controller, and the "target" in the right column refers to a port of the host II controller.

As described above with reference to FIG. 7, a host may request access to a specified logical volume in the storage subsystem. If a host may access only a very limited set of the logical volumes in the data storage subsystem, however, it may be desirable for the port adapter to report back to each host a limited range of LUNs representing logical volumes that the host

can access, and for the port adapter to map this limited range of LUNs to the limited set of logical volumes that each host can access.

- 5 Nothing in this text discloses or suggests issuing a corresponding operation to the storage device, wherein the corresponding operation correlates to the operation on the virtual disk; completing the corresponding operation; and presenting the completed corresponding operation to the virtual disk.

- In sum, contrary to the assertion in the Action, Blumenau neither
10 discloses nor suggests the limitations of independent claim 24. Accordingly, Blumenau cannot render obvious independent claim 24.

 Dependent claims 25-30 depend from claim 24 and are allowable by virtue of this dependency, and by virtue of the limitations recited therein.

- Independent **claim 31** was rejected on the basis of the same disclosure
15 applied to independent claim 24. Applicants traverse this rejection, and assert that same arguments asserted with reference to claim 24.

 Dependent claims 31-33 depend from claim 31 and are allowable by virtue of this dependency, and by virtue of the limitations recited therein.

- Independent **claim 34** was rejected on the same basis as independent
20 claim 24. Applicants traverse this rejection, and assert that same arguments asserted with reference to claim 24.

 Independent **claim 35** was rejected on the same basis as independent claim 31. Applicants traverse this rejection, and assert that same arguments asserted with reference to claim 31.

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CONCLUSION


Claims 1-35 are in believed to be in condition for allowance. Applicant
5 respectfully requests reconsideration and prompt issuance of the present
application. Should any issue remain that prevents immediate issuance of the
application, the Examiner is encouraged to contact the undersigned attorney to
discuss the unresolved issue.

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Respectfully Submitted,
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